

**WHAT IS CLAIMED IS:**

- 1           1.       An audio processing method, comprising:  
2           sequentially rendering audio summaries and transition audio segments  
3           with at least one transition audio segment rendered between each pair of  
4           sequential audio summaries, wherein each audio summary comprises digital  
5           content summarizing at least a portion of a respective associated audio piece.
- 1           2.       The method of claim 1, wherein identical transition audio segments  
2           are rendered between pairs of sequential audio summaries.
- 1           3.       The method of claim 2, wherein each identical transition audio  
2           segment corresponds to a Gabor function in a time domain representation.
- 1           4.       The method of claim 3, wherein each Gabor function has a center  
2           frequency substantially corresponding to a center pitch of an adjacent audio  
3           summary.
- 1           5.       The method of claim 1, wherein the audio summaries and the  
2           interleaved transition audio segments are rendered consecutively.
- 1           6.       The method of claim 1, wherein each audio summary is a  
2           representative segment of a respective associated audio piece.
- 1           7.       The method of claim 1, further comprising classifying audio pieces  
2           into categories in response to user input received during rendering of the  
3           associated audio summaries.
- 1           8.       The method of claim 7, further comprising building a playlist based  
2           on categories assigned to a set of audio pieces.
- 1           9.       The method of claim 1, wherein at least one audio summary is  
2           linked to an associated audio piece.
- 1           10.      The method of claim 9, further comprising rendering an audio piece  
2           linked to an associated audio summary in response to user input received during  
3           rendering of the associated audio summary.

1           11.    The method of claim 1, further comprising rendering a given audio  
2 piece beginning at a location in the given audio piece linked to an audio summary  
3 associated with the given audio piece.

1           12.    The method of claim 11, further comprising rendering a second  
2 audio piece at a location in the second audio piece linked to a successive audio  
3 summary associated with the second audio piece.

1           13.    The method of claim 1, further comprising ordering audio  
2 summaries in a sequence based on similarity to a given audio summary.

1           14.    The method of claim 13, wherein audio summaries are rendered in  
2 accordance with the ordered sequence.

1           15.    The method of claim 1, wherein each audio piece is associated with  
2 multiple audio summaries and a single audio summary is rendered automatically  
3 for each audio piece, and further comprising rendering an audio summary for a  
4 given audio piece in response to user input received during rendering of a  
5 preceding audio summary associated with the given audio piece.

1           16.    The method of claim 1, further comprising normalizing audio  
2 summaries to a common loudness level.

1           17.    An audio processing system, comprising:  
2           a rendering engine operable to sequentially render audio summaries and  
3 transition audio segments with at least one transition audio segment rendered  
4 between each pair of sequential audio summaries.

1           18.    A method of generating an annotated audio file, comprising:  
2           annotating an original audio file by embedding therein information  
3 enabling rendering of at least one audio summary contained in the annotated  
4 audio file and comprising digital content summarizing at least a portion of the  
5 original audio file.

1           19.    The method of claim 18, wherein the rendering enabling  
2 information is embedded in a header of the audio file.

1           20.    The method of claim 19, wherein rendering enabling information  
2 includes an audio summary embedded in the audio file header.

1           21.    The method of claim 19, wherein rendering enabling information  
2 embedded in the audio file header includes one or more pointers to one or more  
3 respective locations in the original audio file.

1           22.    The method of claim 18, wherein rendering enabling information is  
2 embedded at different locations in the annotated audio file separated by audio  
3 content of the original audio file.

1           23.    The method of claim 22, wherein rendering enabling information  
2 includes audio summaries embedded at different respective locations in the  
3 annotated audio file separated by audio content of the original audio file.

1           24.    The method of claim 22, wherein rendering enabling information  
2 includes pointers to locations in the original audio file, the pointers being  
3 embedded at different respective locations in the annotated audio file separated  
4 by audio content of the original audio file.

1           25.    The method of claim 18, wherein rendering enabling information  
2 includes hierarchical information enabling rendering of audio summaries at  
3 different levels of detail.

1           26.    The method of claim 18, wherein at least one audio summary  
2 corresponds to a representative sample of the original audio file.

1           27.    The method of claim 18, wherein at least one audio summary  
2 corresponds to audio content not contained in the original audio file.

1           28.    The method of claim 18, wherein at least one audio summary  
2 corresponds to one or more images representative of original audio file content.

1           29.    The method of claim 18, wherein at least one audio summary  
2 corresponds to digital textual content.

1           30.     A software program for generating an annotated audio file, the  
2     software program residing on a medium readable by an electronic device and  
3     comprising instructions for causing an electronic device to:  
4           annotate an original audio file by embedding therein information enabling  
5     rendering of at least one audio summary contained in the annotated audio file and  
6     comprising digital content summarizing at least a portion of the original audio  
7     file.

1           31.     A method of generating an annotated audio file, comprising:  
2           annotating an original audio file by providing at least one browsable link  
3     between the original audio file and at least one audio summary comprising digital  
4     content summarizing at least a portion of the original audio file, and storing the  
5     original audio file, the at least one browsable link, and the at least one audio  
6     summary on a common portable storage medium.

1           32.     A portable medium readable by an electronic device and tangibly  
2     storing an original audio file, at least one audio summary comprising digital  
3     content summarizing at least a portion of an original audio file, and at least one  
4     browsable link between the original audio file and the at least one audio  
5     summary.

1           33.     A system for rendering an annotated video file, comprising:  
2           a rendering engine operable to identify information embedded in the  
3     annotated audio file and enabling rendering of at least one audio summary  
4     contained in the annotated audio file and comprising digital content summarizing  
5     at least a portion of the original audio file, and to operable to render the at least  
6     one audio summary.

1           34.     An audio processing method, comprising:  
2           dividing an audio piece into audio segments;  
3           extracting acoustical features from each audio segment;  
4           grouping audio segments into clusters based on the extracted features;  
5           identifying a representative audio segment in each cluster; and

6           selecting a representative audio segment as an audio summary of the audio  
7 piece.

1           35.    The method of claim 34, wherein each audio segment has a  
2 substantially equal rendering time.

1           36.    The method of claim 34, further comprising computing a feature  
2 vector centroid for each cluster, wherein each representative audio segment is  
3 closer to the feature vector centroid computed for the corresponding cluster than  
4 all other audio segments in the corresponding cluster.

1           37.    The method of claim 34, further comprising ranking clusters based  
2 on respective numbers of audio segments in the clusters.

1           38.    The method of claim 37, wherein a representative audio segment of  
2 a highest ranked cluster is selected as the audio summary.